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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,055	08/21/2006	Koji Kikushima	6700-89059	5610

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EXAMINER	
NGO, TANYA T	

ART UNIT	PAPER NUMBER
2613	

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09/08/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/590,055	KIKUSHIMA ET AL.	
	Examiner	Art Unit	
	TANYA NGO	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *8/21/2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/9/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1 through 14 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 2 – 3 and 9 – 10 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Re claims 2-3 and 9-10, the claims recite that the cancellation means comprise of "a filter means for extracting one or more harmonic distortions of the first signal interfering with the second signal in the converted electrical signal". Within the specification, the applicant also discloses that the cancellation means comprises a filter for extracting an electrical signal (paragraph [0008] lines 2-6, paragraph [0009] lines 3-6, paragraph [0013] lines 10-12 of applicant's disclosure) not harmonic distortions. The applicant later discloses that an electrical signal is passed "through a high-pass filter 24 to extract harmonic distortions having higher frequencies then the FM batch conversion signal" (paragraph

[0040] lines7-10 of applicant's disclosure) but there is no mention of a second signal or that the harmonic distortions are interfering with the second signal.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farina as applied to claim 1 above, and further in view of Kikushima et al (herein Kikushima) WO 2006009197 A1 (the examiner is using the PG PUB 2007/0212073 A1 of the US Application as a translation of the PCT application, which is in Japanese. The PG PUB and the above listed PCT publication are in the same patent family).

Re claim 1, Farina discloses an optical transmitting device of modulating an optical signal by a first signal with and then by a second signal for transmission *(Fig. 5)*, the device comprises:

an optical splitting means for splitting the-optical signal modulated_by the first signal into split optical signals *(the optical signal is input into a modulator 52 and is modulated with signals S in the main modulator, 54. The modulated main optical signal is split in the modulator into two parts and output from the modulator)*, the optical signal modulated by the first signal including one or more harmonic distortions of the first signal *(the main optical signal contains all the components of S and includes distortion, Fig. 5. Furthermore, the present system is darn*

toward correcting harmonic distortion, therefore the distortion in the system comprises of harmonic distortion);

a photoelectric conversion means for converting one of the split optical signals to a converted electrical signal *(a portion of the main modulated optical beam is tapped and detected by the photodetector 65, Fig. 5, Col. 4, lines 47-49)*; and

a cancellation means for canceling the one or more harmonic distortions of the first signal by using the converted electrical signal *(the portion of the main modulated optical beam that is tapped is amplified to the delay and equalization circuit 68, and continues through a signal combiner and is eventually fend into correction modulator, 54. The two optical beams from the main modulator 52 and the correction modulator 54 are then combined at final optical coupler 72 to achieve cancellation of nonlinear distortion products, Col. 8, lines 45-57. Nonlinear distortion products comprise of harmonic distortion)*.

Farina does not disclose that the harmonic distortions interfere with the second signal contained in the other of the split optical signals. Kikushima discloses an optical signal transmitting device *(10c, Fig. 6)* that includes the ability to include second signals with an already existing optical signal by placing an external modulator *(316, Fig. 6)* after an optical transmitter *(paragraph [0070])*, such as the one disclosed by Farina. Furthermore, Farina discloses that the signal in Fig. 4 is a simulated cable television (CATV) carriers at frequencies consistent with national telecommunication standards NTSC specification *(Col. 6, lines 46-53.*. Farina and Kikushima are analogous art because they are from the same field of endeavor, optical transmission of CATV signals. At the time of the invention, it would

have been obvious to one of ordinary skill in the art, having the teachings of Farina and Kikushima before him or her, to modify the transmitter of Farina to further include an external modulator 316 after the transmitter to further include other signal because then it is possible to provide the subscriber with the CATV video signals as well as other signal *(paragraph [0007])*.

Naturally flowing from this combination of Farina and Kikushima, the distortion that is included with the signals output from the first modulator will interfere with the second signal when if the distortion is not removed before the optical signal is input into the external modulator because the distortion will already be the in optical signal before it is further modulated by the second signal.

Re claims 2 and 9, Farina and Kikushima discloses all the elements of claims 1 and 8 which claims 2 and 10 are dependent upon. Furthermore, Farina discloses the cancellation means comprises:

a filter means for extracting the one or more harmonic distortions of the first signal interfering with the second signal in the converted electrical signal *(signal combiner 63, Fig. 5, outputs a difference signal between the main modulator and the input signal, Col. 4, lines 40-54.Tthe difference between the two signals input into the combiner is the distortion that is present in the system, which includes harmonic distortion. The difference signal is an electrical signal.)* ;

a modulation means for modulating the other of the split optical signals with the electrical signal *(correction modulator 54, Fig. 5, outputs a modulated signal that was modulated by the electrical signal and phase shifted by delay element and is eventually coupled with the other*

split optical signal, which modulates the split optical signal. Therefore, the other split optical signal is modulated with a distortion canceling signal in the coupler which originates from the electrical signal).

Farina discloses a phase adjustment means *(94, delay element)*. However, Farina does not disclose a phase adjustment means for the adjusting a phase of the extracted electrical. The phase adjustment is required to create the inverse distortion signal that is output from the correction modulator, 54, Fig. 5, . The phase adjustment or delay must take place at any one of the input signals of the correction modulator so that one of the inputs contains the phase adjustment and the adjustment will be present in the output of the correction modulator, creating the a proper correction signal. Therefore, at the time of the invention it would have been obvious for one of ordinary skill in the art, having the teachings of Farina to know that the phase adjustment means is required in one of the input signals of the error correction modulator to output the inverse distortion signal and place the phase adjuster in series with the optical signal, as disclosed by Farina, or in series with the electrical signal so that the delay or phase adjustment will be present in the correction signal. Phase adjustment means for electrical signals is well known in the art.

Re claims 3 and 10, Farina and Sakamoto disclose all the elements of claim 1 and 8, which claims 3 and 10 are dependent. Furthermore, Farina discloses the cancellation means comprises:

a filter means for extracting the one or more harmonic distortions of the first signal interfering with the second signal in the converted electrical signal *(signal combiner 63, Fig.*

5, outputs a difference signal between the main modulator and the input signal, Col. 4, lines 40-54. Tthe difference between the two signals input into the combiner is the distortion that is present in the system, which includes harmonic distortion. The difference signal is an electrical signal.).

Farina discloses a phase adjustment means *(94, delay element)*. However, Farina does not disclose a phase adjustment means for the adjusting a phase of the extracted electrical. The phase adjustment is required to create the inverse distortion signal that is output from the correction modulator, 54, Fig. 5, . The phase adjustment or delay must take place at any one of the input signals of the correction modulator so that one of the inputs contains the phase adjustment and the adjustment will be present in the output of the correction modulator, creating the a proper correction signal. Therefore, at the time of the invention it would have been obvious for one of ordinary skill in the art, having the teachings of Farina to know that the phase adjustment means is required in one of the input signals of the error correction modulator to output the inverse distortion signal and place the phase adjuster in series with the optical signal, as disclosed by Farina, or in series with the electrical signal so that the delay or phase adjustment will be present in the correction signal. Phase adjustment means for electrical signals is well known in the art.

Furthermore, Farina does not disclose a combining means for combining the phase-adjusted electrical signal and the second signal. However, Farina does disclose that the phase adjusted electrical signal is going to be feed into a correction modulator that will output an optical correction signal to be combined with the already modulated split first signal *(Fig. 5)* and Sakamoto discloses an external modulator *(316, Fig. 6)* in order to combine second

signals with the already modulated optical signal. Since the correction modulator of Farina and the external modulator of Sakamoto are both further modulating the signal output for the first modulator *(52, Fig. 4)* of Farina, it would be obvious for one of ordinary skill in the art to use one modulator rather then two modulators, and to combined both the electrical signals that inputted into the external modulator of Sakamoto and the correction modulator of Farina to create one input signal that has both the corrections signal and the second signal and modulate the output of the first modulator of Farina once to reduce complexity and cost because it reduces the number of modulators.

Re claims 4 and 11, Farina and Sakamoto discloses all the elements of claim 1 and 8, which claims 4 and 11 are dependent upon. Farina does not appear to explicitly disclose that the first signal is a FM batch converted signal. However, Farina does disclose that the signal in Fig. 4 is a simulated cable television (CATV) carriers at frequencies consistent with national telecommunication standards NTSC specification *(Col. 6, lines 46-53.* Kikushima discloses an optical signal transmitting device where the CATV (*A, Fig. 6)* inputted into a FM batch converter converting a first signal in a batch before modulating an optical signal in intensity with the FM batch converted signal in the optical transmitter *(paragraph [0070])*. Farina and Kikushima are analogous art because they are from the same field of endeavor, optical transmission of CATV signals. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Farina and Kikushima before him or her, to modify the signals of Farina to include the FM batch converter prior to the modulator or optical transmitter of Kikushima because the FM batch converted 112

obtains a broadband frequency-modulating signal *(paragraph [0057])* allowing an individual to combine multiple CATV into one signal and simplify the system.

Re claims 5 and 12, Farina and Sakamoto disclose all the elements of claim 4 and 11, which claims 5 and 12 are dependent upon. Furthermore, Sakamoto discloses the second signal is a satellite broadcasting RF signal *(B, Fig. 6)*.

Re claims 6 and 13, Farina and Sakamoto disclose all the elements of claims 5 and 12, which claims 6 and 13 are dependent upon. Sakamoto discloses a conventional configuration of an optical signal transmission system according to a conventional art in Fig. 1*(paragraph [0035])*, therefore the system disclosed is considered common in the art. In Fig. 1, Sakamoto discloses the optical receiving device comprises:

an optical splitting means for splitting the received optical signal to an optical signal containing the FM batch converted signal and an optical signal containing the satellite broadcasting RF signal *(WDM, Fig. 1, which receives and optical signal from the optical signal transmitting device outputs two wavelengths, one containing an FM batch converted signal, and a second containing satellite broadcasting signal. Since the output is two wavelengths, it is obvious that the signal is split into two signals by wavelength, Fig. 1)*;

a first photoelectric conversion means for converting the optical signal containing the FM batch conversion signal split by the optical splitting means to an electrical signal *(optical receiver, which is a photo-receiving element receiving the first wavelength, which is the FM batch converted signal, Fig. 1)* ;

a demodulation means for FM demodulating the electrical signal converted by the first photoelectric conversion means *(FM demodulator, Fig. 1)*;

a second photoelectric conversion means for converting the optical signal containing the satellite broadcasting RF signal split by the optical splitting means to an electrical signal *(optical receiver, which is a photo-receiving element receiving the second wavelength, which is the BS/CS-IF signals, Fig. 1, where the BS/CS-IF signals are the satellite broadcasting RF signals, paragraph [0004])*.

Sakamoto does not disclose a downconverting means for down-converting the electrical signal converted by the second photoelectric conversion means in this exemplary configuration of the signal. However, Sakamoto discloses another embodiment of the optical signal receiving device comprising of a downconverting means for down-converting the electrical signal converted *(BS/CS converter 90 which down-converts the separated second signal, Fig. 2, paragraph [0058])*. At the time of the invention, it would have been obvious to one of ordinary skill in the art, having the teachings of Sakamoto before him or her, to modify the optical signal receiving device of Fig. 1 to include the BS/CS converter of Fig. 2 because the converter will output BS/CS-IF signals that can be further processed by the user.

Re claims 7 and 14, Farina and Sakamoto disclose all the elements of claim 5 and 12, which claims 7 and 4 are dependent upon. Furthermore, Farina and Sakamoto discloses an optical transmission system comprising the optical transmitting device as set forth in claim 5 and 12 *(previously disclosed)* and an optical receiving device for receiving an optical signal

transmitted via an optical path from the optical transmitting device *(70a, Fig. 2, paragraph [0058])*, wherein the optical receiving device comprises:

a photoelectric conversion means *(optical receiver 5172 pholoelectrically converts an optical signal transmitted via an optical fiber, paragraph [0058])* for converting the received optical signal to an electrical signal;

a filter means for separating the electrical signal converted by the photoelectric conversion means to the FM batch converted signal and the satellite broadcasting RF signal *(High-pass filter 174b and Low-pass filter 174a, Fig. 2, for selectively filtering out a second signal, which is the satellite broadcasting RF signal, and the RM batch converted signal from the electrical signal, paragraph [0080])*;

a demodulation means for FM demodulating the FM batch converted signal separated by the filter means *(FM demodulator, 176, Fig. 2, for demodulating the filtered FM batch converted signal to restore the first signal)*; and

a downconverting means for down-converting the satellite broadcasting RF signal separated by the filter means *(BS/CS converter 90 which down-converts the separated second signal, Fig. 2, paragraph [0058])*.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TANYA NGO whose telephone number is (571) 270-7488. The examiner can normally be reached on M - F from 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngo/
August 27, 2009

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613